This Track 1 Decision Document is marked "Draft" but is a final document signed by the agencies.

_____ Date 2/15/2005

DOE/ID-10901
April 2002

Site 035 Decision Documentation Package, OU 10-08

DECISION DOCUMENTATION PACKAGE
COVER SHEET

Prepared in accordance with

TRACK 1 SITES:
GUIDANCE FOR ASSESSING
LOW PROBABILITY HAZARD SITES
AT THE INEEL

Site Description: **Detonation Pits North of EOCR**

Site ID: **035** **Operable Unit: 10-08**

Waste Area Group: 10

I. SUMMARY – Physical description of the site:

Site 035 consists of three earthen detonation pits containing scattered debris located approximately 600 feet north of the Security Training Facility (STF) Gun Range berm. The Experimental Organic Cooled Reactor (EOCR) complex was converted to the STF in 1983 and served as a training center for the INEEL security helicopters and Special Response Team. This site was used from 1983 to 1990 for security force practice maneuvers using small caliber weapons. Site investigations revealed that the pits are 12-18 feet in diameter and 1-3 feet deep and contain scattered debris including weathered wood, small metal fragments, glass, plastic, foam insulation, wire, hose pieces, M-60 blanks, and a spent tear gas bomb

This site was originally listed as part of an environmental baseline assessment in 1994 and identified as a potential new waste site in 1995. In accordance with Management Control Procedure-3448, *Reporting or Disturbance of Suspected Inactive Waste Sites*, a new site identification form was completed for this site. As part of the process, a field team wrote a site description, and collected photographs and global positioning system (GPS) coordinates of the site (the GPS coordinates are . The GPS coordinate system is listed as NAD 27, Idaho East Zone, State Plane Coordinates. The new site identification process also included a search and review of existing historical documentation.

Site 035 is located within the Naval firing fan, an area of the INEEL set aside by the U.S. Navy to test fire naval guns, conduct mass detonation tests, practice aerial bombing, and perform explosive material compatibility tests during World War II. Interviews with INEEL explosive experts indicate that the detonation pits could be the result of naval artillery testing.

In addition, INEEL personnel conducted a "consolidation of rapidly solidified powders" test in this area approximately 15 years ago and the pits may have been caused by Trinitrotoluene (TNT), C-4, and other high explosives used in the test. The site investigation revealed that although there is visual evidence of disturbed soil and vegetation, there is no evidence of explosive residuals. The vegetation in the center of the pits and surrounding area appears healthy and well established.

Another suggestion was that the pits resulted from activities performed by Security Training Facility (STF) personnel. These operations include blowing up vehicles, which may account for the metal fragments scattered throughout the area. Although there is no visual evidence of stained soil or odor, it was suggested that transmission and other fluids might have contaminated the soil in this area.

DECISION RECOMMENDATION

II. SUMMARY - Qualitative Assessment of Risk:

The reliability of information provided in this report is medium to high. Interviews with an INEEL explosives expert revealed that the area was used to perform various tests that included the use of TNT, C-4 and other highly explosive materials. It is also possible that the pits and debris resulted from maneuvers performed by STF security force personnel. These include blowing up vehicles, which may have resulted in contamination of the soil from vehicle fluids and metals, and exercises using tear gas grenades and smoke bombs. The debris includes weathered wood, small metal fragments, glass, plastic, foam insulation, wire, hose pieces, M-60 blanks, and a spent tear gas bomb

Site investigations and photographs provide limited evidence of potential hazardous substances or materials that may present a danger to human health and the environment. Lacking field screening or sample data for this site, however, the overall qualitative risk is unknown.

III. SUMMARY - Consequences of Error:

False negative error:
The possibility of contamination levels at this site being above risk-based limits is remote; however, no field sampling or data exist for this site to determine the associated risks.

False positive error:
If further action were completed at a low risk site, funds expended could exceed the environmental benefit. Surface soil sampling and analysis for organic compounds, metals, radionuclides, and other hazardous constituents would be needed to verify the presence or absence of contamination. Based on interviews, field investigations, existing historical information, and the lack of sample data, this site needs further investigation to be classified as No Further Action.

IV. SUMMARY - Other Decision Drivers:

There are no other decision drivers for this site.

Recommended Action:

It is recommended that this newly identified site continue under the Track 2 process to determine the extent and concentration of contamination that may be present and to determine any potential harm to human health and the environment. The weathered wood, glass, plastic, foam, wire, hose pieces, metal fragments, M-60 blanks and spent tear gas bombs do not appear to pose a risk to the site or surrounding vegetation, and there is no visual evidence of soil staining; however, further site screening and/or sampling is needed to confirm presence or absence of hazardous constituents.

Signatures:	# Pages: 16	Date: June 4, 2001
Prepared By: Marilyn Paarmann, WPI		DOE WAG Manager:
Approved By:		Independent Review:

Draft

DECISION STATEMENT (DOE RPM)	
Date Received: 1/14/05	
Disposition: All detonation pits are included in OU 10-04 ROD. Therefore, the risk posed by site #035 will be considered in integrated INEEL 5-Year Review. An ESD may be used if 5-Year Review determines that an action is required.	
Date: 1/14/05	# Pages: 1 of 1
Name: Kathleen Hain	Signature: Kathleen E Hain

DECISION STATEMENT
(EPA RPM)

Date Received: 5/8/02 Site 035

Disposition:

Site consists of 3 old detonation pits containing debris and located within the Naval Firing Pan. Based on the description this site appears very similar to OU 10-04 sites. Therefore, rather than perform a separate Track 2, I recommend that the site be incorporated into the RD/RA OU 10-04 process. If the OU 10-04 is found too specific to automatically permit this, an ESD should be prepared updating the public to this inclusion

Date: 2/25/03	**# Pages:** 1
Name: Wayne Pierce	**Signature:** Wayne Pierce

DECISION STATEMENT
(IDEQ RPM)

Date Received: September 4, 2001

Disposition:

Site # 035

Site # 035 consists of three detonation pits that are 12 to 18 feet in diameter and 1 to 3 feet deep. The pits are located north of the STF Gun Range berm and were used by security personnel for small caliber weapons training. The origin of the pits is not clear but could be from ordnance testing during World War II but INEEL personnel using explosives also have used the pits. There is no visual evidence of explosive residuals but there is disturbed vegetation and soil. Because this site appears to be related to other ordnance sites, it is recommended that this site be incorporated into the OU 10-04 RD/RA process. If necessary, an ESD can be developed to roll this site into the OU 10-04 ROD.

Date: August 8, 2003	**# Pages:** 1
Name: Doyle F. Koch	**Signature:** Doyle F Koch for Dean Nygard

Draft

PROCESS/WASTE WORKSHEET SITE ID: 035	PROCESS: Detonation Pits North of EOCR WASTE: Three Detonation Pits and Scattered Debris	
Col 1 **Processes Associated With This Site**	**Col 2** **Waste Description & Handling Procedures**	**Col 3** **Description & Location of any Artifacts/Structures/Disposal Areas Associated with this Waste or Process**
Three detonation pits with disturbed soil/vegetation and scattered debris.	The pits may have resulted from: 1) World War II Naval ordnance testing; 2) INEEL "consolidation of rapidly solidified powder" tests that were conducted ~15 years ago; and/or 3) STF security force practice maneuvers ~10 years ago which included demolition of automobiles and exercises using tear gas and smoke bombs.	**Artifact:** Three detonation pits containing scattered debris **Location:** The site is approximately 600 feet north of the STF Gun Range berm (STF formerly EOCR) **Description:** Each pit was estimated to be ~12 -18 feet in diameter and 1-3 feet deep. Wood, small metal fragments, glass, plastic, foam insulation, wire, hose pieces, M-60 blanks, and a tear gas bomb were found scattered in the pits and surrounding area.

Draft

CONTAMINANT WORKSHEET

SITE ID: 035
PROCESS: (Col 1) Detonation Pits North of EOCR
WASTE: (Col 2) Three Detonation Pits With Disturbed Soil and Debris

Col 4 What Known/Potential Hazardous Substance/Constituents are Associated with this Waste or Process?	Col 5 Potential Sources Associated with this Hazardous Material	Col 6 Known/Estimated Concentration of Hazardous Substances/ Constituents	Col 7 Risk-based Concentration	Col 8 Qualitative Risk Assessment (hi/med/low)	Col 9 Overall Reliability (high/med/low)
Unknown	Soil	Unknown	Unknown	Med	Med

Question 1. What are the waste generation processes, locations, and dates of operation associated with this site?

Block 1 Answer:

Site 035 consists of three detonation pits with scattered debris located approximately 600 feet north of the STF Gun Range berm. The Experimental Organic Cooled Reactor (EOCR) complex was converted to the STF in 1983 and served as a training center for the INEEL security helicopter personnel and Special Response Team. This site was used from 1983 to 1990 for security force practice maneuvers using small caliber weapons.

Interviews with INEEL explosives experts suggest that the pits may have resulted from: World War II Naval ordnance testing; INEEL "consolidation of rapidly solidified powder" tests conducted ~15 years ago using TNT, C-4, and other high explosives; and/or STF security force practice maneuvers ~10 years ago which included demolition of vehicles, and exercises using tear gas and smoke bombs. The pits are 12-18 feet in diameter and 1-3 feet deep. Wood, small metal fragments, glass, plastic, foam insulation, wire, hose pieces, M-60 blanks, and a tear gas bomb were found in the pits and surrounding area.

Block 2 How reliable are the information sources? X High _Med _Low (check one)
Explain the reasoning behind this evaluation.

Interviews were conducted with INEEL Environmental Restoration (ER) personnel, an explosives expert, and an environmental baseline assessment team member who investigated the site and were able to describe the condition and suggest the origin of the detonation pits and debris.

Block 3 Has this INFORMATION been confirmed? X Yes _No (check one)
If so, describe the confirmation.

Photographs of the site, interviews with INEEL personnel, and a 1999 site investigation confirmed the location and physical description of the site.

Block 4 Sources of Information [check appropriate box(es) & source number from reference list]

No available information	[ ]		**Analytical data**	[ ]	
Anecdotal	[X]	2,5	**Documentation about data**	[ ]	
Historical process data	[ ]		**Disposal data**	[ ]	
Current process data	[ ]		**Q.A. data**	[ ]	
Photographs	[X]	3	**Safety analysis report**	[ ]	
Engineering/site drawings	[ ]		**D&D report**	[ ]	
Unusual Occurrence Report	[ ]		**Initial assessment**	[X]	4
Summary documents	[ ]		**Well data**	[ ]	
Facility SOPs	[ ]		**Construction data**	[ ]	
OTHER	[ ]				

Question 2. What are the disposal processes, locations, and dates of operation associated with this site? How was the waste disposed?

Block 1 Answer:

Site 035 consists of three detonation pits located approximately 600 feet north of the STF Gun Range berm. The Experimental Organic Cooled Reactor (EOCR) complex was converted to the STF in 1983 and served as a training center for the INEEL security helicopters and Special Response Team. This site was used from 1983 to 1990 for security force practice maneuvers using small caliber weapons. Interviews with INEEL explosives experts suggest that the pits may have resulted from: World War II Naval ordnance testing; INEEL "consolidation of rapidly solidified powder" tests conducted ~15 years ago using TNT, C-4, and other high explosives; and/or STF security force practice maneuvers ~10 years ago which included demolition of automobiles and exercises using tear gas and smoke bombs. The pits are 12-18 feet in diameter and 1-3 feet deep. Wood, small metal fragments, glass, plastic, foam insulation, wire, hose pieces, M-60 blanks, and a tear gas bomb were found in the pits and surrounding area.

Block 2 How reliable are the information sources? X High _Med _Low (check one)
Explain the reasoning behind this evaluation.

Interviews were conducted with INEEL Environmental Restoration (ER) personnel, an explosives expert, and an environmental baseline assessment team member who investigated the site and were able to describe the condition and suggest the origin of the detonation pits and debris.

Block 3 Has this INFORMATION been confirmed? X Yes _No (check one)
If so, describe the confirmation.

Photographs of the site, interviews with INEEL personnel, and a 1999 site investigation confirmed the location and physical description of the site.

Block 4 Sources of Information [check appropriate box(es) & source number from reference list]

No available information	[ ]		**Analytical data**	[ ]
Anecdotal	[X]	2,5	**Documentation about data**	[ ]
Historical process data	[ ]		**Disposal data**	[ ]
Current process data	[ ]		**Q.A. data**	[ ]
Photographs	[X]	3	**Safety analysis report**	[ ]
Engineering/site drawings	[ ]		**D&D report**	[ ]
Unusual Occurrence Report	[ ]		**Initial assessment**	[X] 4
Summary documents	[ ]		**Well data**	[ ]
Facility SOPs	[ ]		**Construction data**	[ ]
OTHER	[ ]			

Question 3. Is there evidence that a source exists at this site? If so, list the sources and describe the evidence.

Block 1 Answer:

There is limited evidence that a source exists at Site 035.

INEEL personnel performed tests in this area using TNT, C-4, and other high explosives and there is potential residual TNT in the soil. Security Force training maneuvers conducted in this area included vehicle demolition, and use of tear gas and smoke bombs. These activities may have resulted in soil contamination from vehicle fluids, and scattering of fragments from vehicles, tear gas and smoke bombs. There is evidence of disturbed soil and vegetation; however, some vegetation is apparent in the pits and surrounding areas. There is no visual evidence of stained soil, nor is there any reported odor. No sample data exist for this site and to confirm the presence or absence of hazardous constituents, further investigation involving field screening and/or sampling would be needed.

Block 2 How reliable are the information sources? _ High X Med _Low (check one)
Explain the reasoning behind this evaluation.

Discussions were held with an INEEL explosives expert who visited the site and is familiar with past practices at the INEEL. Site investigations and photographs confirm the present physical condition of the area. Further site investigations involving field screening and/or soil sampling would be necessary to confirm presence or absence of a contaminant source.

Block 3 Has this information been confirmed? __ Yes X No (check one)
If so, describe the confirmation.

Block 4 Sources of Information [check appropriate box(es) & source number from reference list]

No available information	[ ]	**Analytical data**	[ ]
Anecdotal	[X] 2,5	**Documentation about data**	[ ]
Historical process data	[ ]	**Disposal data**	[ ]
Current process data	[ ]	**Q.A. data**	[ ]
Photographs	[X] 3	**Safety analysis report**	[ ]
Engineering/site drawings	[ ]	**D&D report**	[ ]
Unusual Occurrence Report	[ ]	**Initial assessment**	[X] 4
Summary documents	[ ]	**Well data**	[ ]
Facility SOPs	[ ]	**Construction data**	[ ]
OTHER	[ ]		

Question 4. Is there empirical, circumstantial, or other evidence of migration? If so, what is it?

Block 1 Answer:

Migration of potential contaminants cannot yet be determined with existing information, but site investigations and photographs reveal no visual evidence of stained or discolored soil.

This site does show some evidence of disturbed soil and vegetation in some areas; however, vegetation in the center of the pits and surrounding area appears to be well established. Based on historical process knowledge, there is potential for soil contamination from residual TNT and RDX, and other high explosives. No field screening or sampling has been conducted at this site for organics, metals, radionuclides or other hazardous constituents to confirm the existence of a hazardous source.

Block 2 How reliable are the information sources? __ High _X_ Med _Low (check one)
Explain the reasoning behind this evaluation.

Discussions were held with an INEEL explosives expert who visited the site and is familiar with past practices at this site. Site investigations and photographs confirm the present physical condition of the area. Further site investigations involving field screening and/or soil sampling would be necessary to confirm the presence or absence of a contaminant source.

Block 3 Has this information been confirmed? _ Yes _X_ No (check one)
If so, describe the confirmation.

Block 4 Sources of Information [check appropriate box(es) & source number from reference list]

No available information	[ ]	**Analytical data**	[ ]
Anecdotal	[X] 2,5	**Documentation about data**	[ ]
Historical process data	[ ]	**Disposal data**	[ ]
Current process data	[ ]	**Q.A. data**	[ ]
Photographs	[X] 3	**Safety analysis report**	[ ]
Engineering/site drawings	[ ]	**D&D report**	[ ]
Unusual Occurrence Report	[ ]	**Initial assessment**	[X] 4
Summary documents	[ ]	**Well data**	[ ]
Facility SOPs	[ ]	**Construction data**	[ ]
OTHER	[X] 6		

Question 5. Does site operating or disposal historical information allow estimation of the pattern of **potential contamination? If the pattern is expected to be a scattering of hot spots, what is the expected minimum size of a significant hot spot?**

Block 1 Answer:

The estimated pattern of potential contamination would be the areas within and surrounding the three pits which are each estimated to be 12-18 feet in diameter and 1-3 feet deep; however, field screening and/or sample data would be required to confirm the presence of hazardous constituents. The potential exists for contamination from residual TNT, C-4 and other high explosives in the soil, and fluids from vehicles; however, this cannot be confirmed with existing information.

Block 2 How reliable are the information sources? _High X Med _Low (check one) Explain the reasoning behind this evaluation.

Discussions were held with an INEEL explosives expert who visited the site and is familiar with past practices in this area. Site investigations and photographs confirm the present physical condition of the area.

Block 3 Has this information been confirmed? _Yes X No (check one)
If so, describe the confirmation.

Block 4 Sources of Information [check appropriate box(es) & source number from reference list]

No available information	[ ]	**Analytical data**	[ ]
Anecdotal	[X] 5	**Documentation about data**	[ ]
Historical process data	[ ]	**Disposal data**	[ ]
Current process data	[ ]	**Q.A. data**	[ ]
Photographs	[X] 3	**Safety analysis report**	[ ]
Engineering/site drawings	[ ]	**D&D report**	[ ]
Unusual Occurrence Report	[ ]	**Initial assessment**	[X] 4
Summary documents	[ ]	Well data	[ ]
Facility SOPs	[ ]	Construction data	[ ]
OTHER	[X] 6		

Question 6. Estimate the length, width, and depth of the contaminated region. What is the known or estimated volume of the source? If this is an estimated volume, explain carefully how the estimate was derived.

Block 1 Answer:

The estimated contaminated region or source volume for this site cannot be estimated with existing information. Site investigations and photographs indicate that the three pits are approximately 12-18 feet in diameter and 1-3 feet deep. There is evidence of disturbed soil and vegetation; however, there is no visual evidence of stained or discolored soil. Based on interviews with INEEL personnel, historical waste generation and disposal processes indicate a potential for the existence of hazardous constituents. The estimated volume of a contaminant source cannot be estimated without further investigation involving field screening and/or sampling.

Block 2 How reliable are the information sources? _High X Med _Low (check one)
Explain the reasoning behind this evaluation.

This estimate was derived from the information contained in the environmental baseline assessment, site investigations, and interviews with personnel familiar with INEEL historical processes, and photographs of the site.

Block 3 Has this INFORMATION been confirmed? _Yes X No (check one)
If so, describe the confirmation.

Block 4 Sources of Information [check appropriate box(es) & source number from reference list]

No available information	[ ]	Analytical data	[ ]
Anecdotal	[ ]	Documentation about data	[ ]
Historical process data	[ ]	Disposal data	[ ]
Current process data	[ ]	Q.A. data	[ ]
Photographs	[X] 3	Safety analysis report	[ ]
Engineering/site drawings	[ ]	D&D report	[ ]
Unusual Occurrence Report	[ ]	Initial assessment	[X] 4
Summary documents	[ ]	Well data	[ ]
Facility SOPs	[ ]	Construction data	[ ]
OTHER	[X] 6		

Question 7. What is the known or estimated quantity of hazardous substance/constituent at this source? If the quantity is an estimate, explain carefully how the estimate was derived.

Block 1 Answer:

No sample data exist for this site. The estimated quantity of hazardous substances/constituents at this site cannot be estimated without further site investigation involving field screening or sampling.

Interviews with INEEL personnel have confirmed that the pits and debris resulted from various types of artillery and explosives testing. There is a potential for contamination from residual TNT, C-4 and other high explosives in the soil; however the quantity of hazardous constituents is unknown. The potential also exists for soil contamination from vehicle fluids resulting from STF security force practice maneuvers. The estimated volume of contamination for organics, metals, radionuclides or other hazardous constituents cannot be estimated with existing information.

Block 2 How reliable are the information sources? _High X Med _Low (check one)
Explain the reasoning behind this evaluation.

This evaluation is based on a 1999 site investigation and investigations by an INEEL explosives expert.

Block 3 Has this INFORMATION been confirmed? _Yes X No (check one)
If so, describe the confirmation.

Block 4 Sources of Information [check appropriate box(es) & source number from reference list]

No available information	[ ]		Analytical data	[ ]	
Anecdotal	[X]	5	Documentation about data	[ ]	
Historical process data	[ ]		Disposal data	[ ]	
Current process data	[ ]		Q.A. data	[ ]	
Photographs	[X]	3	Safety analysis report	[ ]	
Engineering/site drawings	[ ]		D&D report	[ ]	
Unusual Occurrence Report	[ ]		Initial assessment	[X]	4
Summary documents	[ ]		Well data	[ ]	
Facility SOPs	[ ]		Construction data	[ ]	
OTHER	[X]	6			

Question 8. Is there evidence that this hazardous substance/constituent is present at the source as it exists today? If so, describe the evidence.

Block 1 Answer:

There is no evidence that a hazardous substance or constituent is present at levels that require action at this site; however this cannot be confirmed with existing information. The detonation pits show evidence of disturbed soil and sparse vegetation; however, there is no visible soil staining or odor. No field screening or sampling has been conducted at this site for organics, metals, radionuclides, or other hazardous constituents to confirm the existence of a hazardous source. Based on historical process knowledge, there is potential for soil contamination from residual TNT, C-4, and other high explosives used in detonation experiments and from vehicle fluids due to practice maneuvers conducted by STF personnel.

Block 2 How reliable are the information sources? _High X Med _Low (check one)
Explain the reasoning behind this evaluation.

This evaluation is based on interviews with personnel who were either directly involved with the waste generation activities conducted at this site or are familiar with past INEEL practices. The evaluation is also based on site investigations and photographs of the site. The presence or absence of a hazardous source cannot be confirmed with existing information.

Block 3 Has this INFORMATION been confirmed? _ Yes X No (check one)
If so, describe the confirmation.

Block 4 Sources of Information [check appropriate box(es) & source number from reference list]

No available information	[ ]	**Analytical data**	[ ]
Anecdotal	[X] 2,5	**Documentation about data**	[ ]
Historical process data	[ ]	**Disposal data**	[ ]
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Unusual Occurrence Report	[ ]	**Initial assessment**	[X] 4
Summary documents	[ ]	**Well data**	[ ]
Facility SOPs	[ ]	**Construction data**	[ ]
OTHER	[X] 6		

REFERENCES

1. DOE, 1992, Track 1 Sites: Guidance for Assessing Low Probability Sites at the INEL, DOE/ID-10390 (92), Revision 1, U.S. Department of Energy, Idaho Falls, Idaho, July.

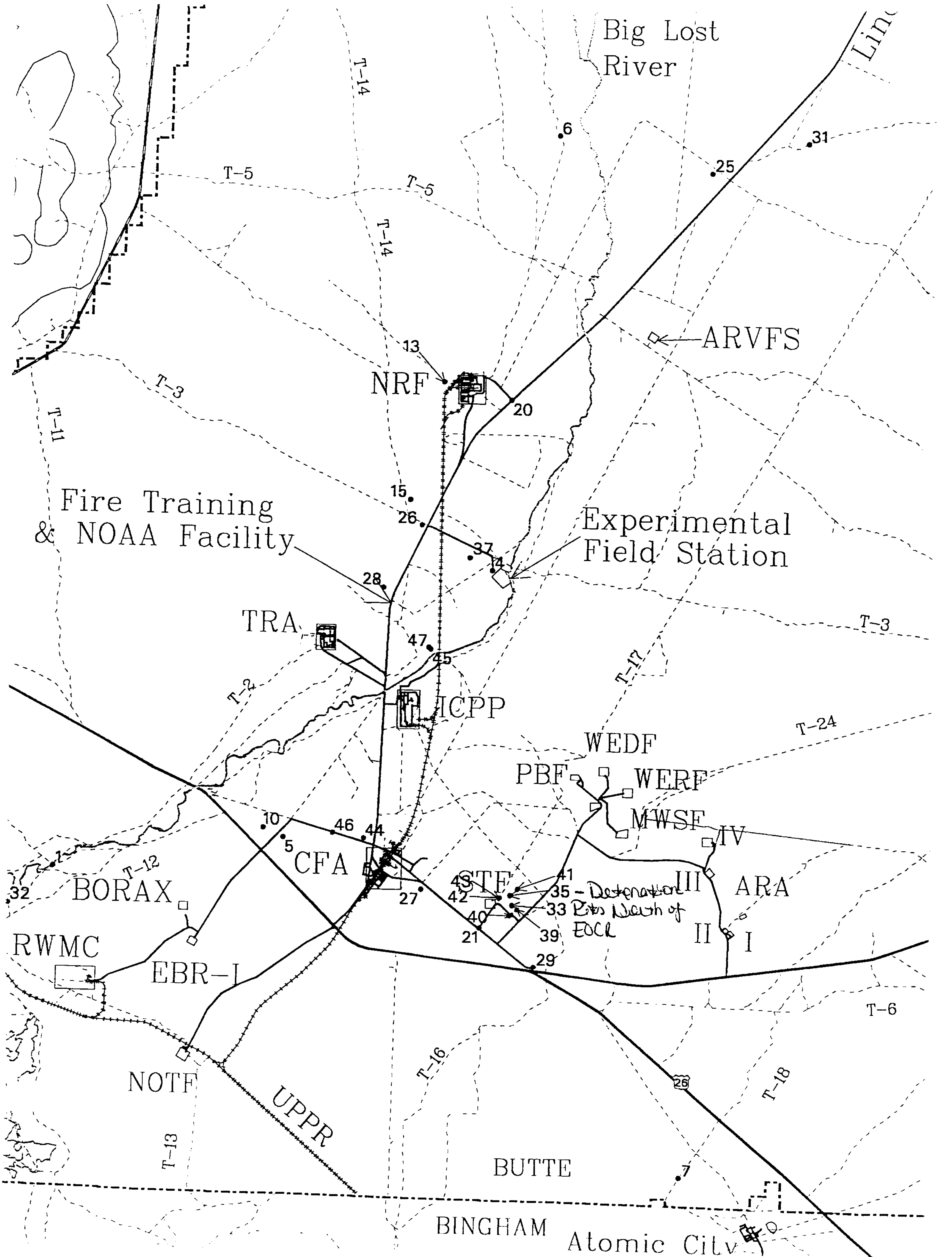
2. Interview with Scott Lebow, Environmental Baseline Assessment team member, February 7, 2001.

3. Photographs of Site #035: PN99-0494-1-11, PN99-0494-1-12

4. FY1999 WAG 10 Newly Identified Sites, Volumes I. and II (New Site Identification Forms).

5. Interview with Hanceford Clayton, INEEL ER ESH&QA Explosives Expert, 4/11/01.

6. Chemical information for TNT, C-4, RDX; http://ennuch.ddg.com/; http://risk.lsd.ornl.gov/tox/profiles; http://www.atsdr.cdc.gov/tfacts; www.ordnance.org/composic.htm



Big Lost River
Lin
T-14
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ARVFS
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NRF
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T-3
T-11
15
Fire Training & NOAA Facility
26
Experimental Field Station
37
4
28
TRA
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45
T-3
T-2
ICPP
T-17
T-24
WEDF
PBF
WERF
10
46
44
5
MWSF
IV
CFA
1
T-12
BORAX
32
43
STF
41
35 - Detonation
42
33 Pits North of EOCR
40
39
21
III
ARA
II
I
27
RWMC
EBR-I
29
T-6
T-16
NOTF
UPPR
26
T-18
T-13
BUTTE
7
BINGHAM
Atomic City

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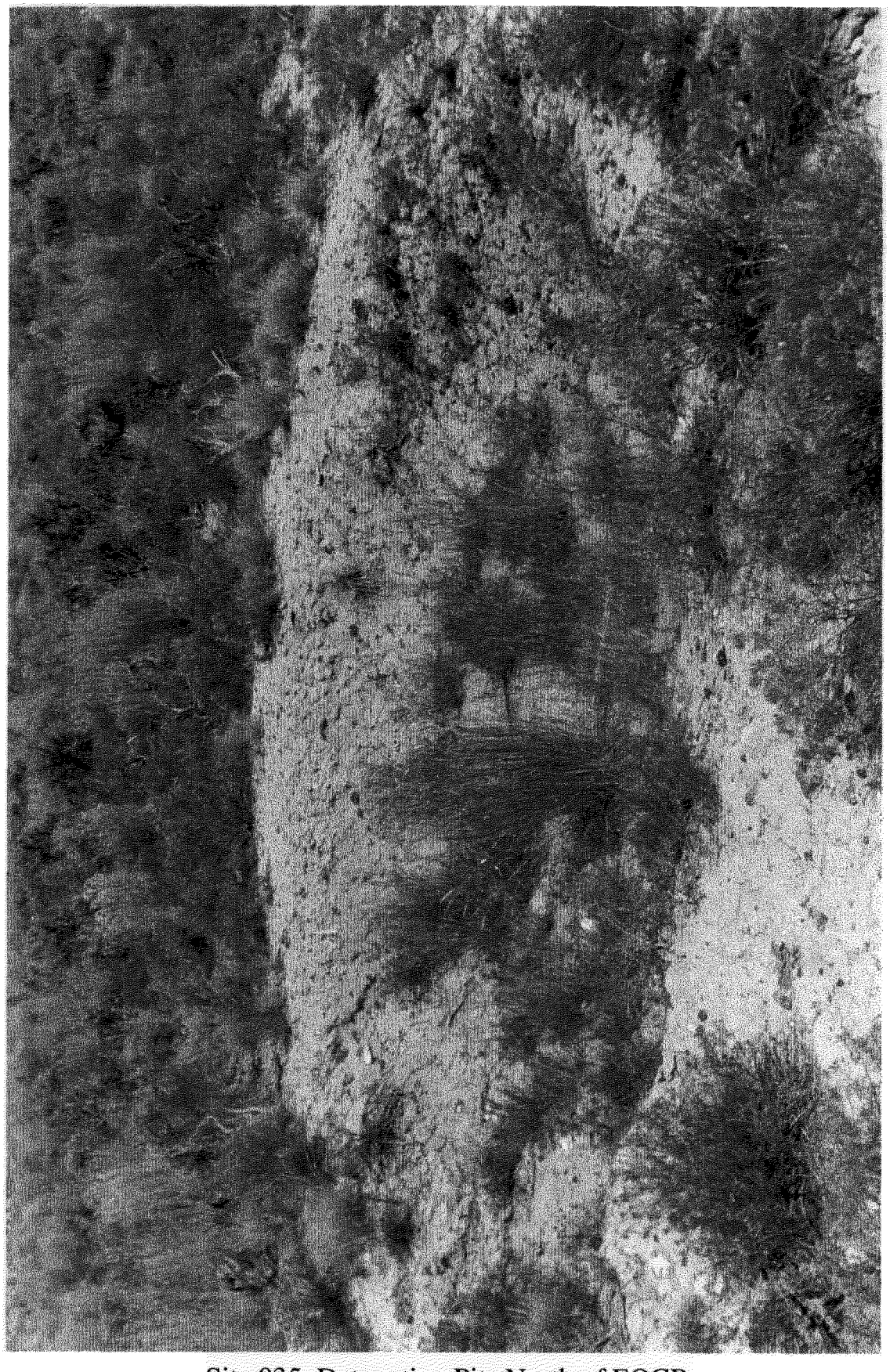
Attachment A

Photographs of Site #035



Site 035. Detonation Pits North of EOCR
(PN99-0494-1-11)

Site 035. Detonation Pits North of EOCR
(PN99-0494-1-12)

Draft

Attachment B

Supporting Information for Site #035

435.36
04/14/99
Rev. 03

NEW SITE IDENTIFICATION

4

Part A – To Be Completed By Observer

1. Person Initiating Report: Jacob Harris	Phone: 526-1877
Contractor WAG Manager: Douglas Burns	Phone: 526-4324

2. Site Title: 035, Detonation Pits North of EOCR

3. Describe the conditions that indicate a possible inactive or unreported waste site. Include location and description of suspicious condition, amount or extent of condition and date observed. A location map and/or diagram identifying the site against controlled survey points or global positioning system descriptors shall be included to help with the site visit. Include any known common names or location descriptors for the waste site.

About 600 feet north of the berm that is north of EOCR, are at least 3 pits or craters. According to Richard Green, he and Environmental Restoration people performed a "consolidation of rapidly solidified powders" test in this area 10 to 15 years ago. Richard thinks some of the pits are from his test and others are navy bomb craters. He said he used TNT, C-4, and other high explosives in his test. During the August 1999 site visit, the pits were 12 to 18 feet in diameter and 1 to 3 feet deep. Wood, small metal fragments, glass, plastic, foam insulation, wire, hose, an M-60 fuse, a tear gas bomb, etc. are found in the area. The GPS coordinates of one pit are . Coordinates of another pit are . The reference number for this site is 035 and can be found on the summary map as provided.

Part B – To Be Completed By Contractor WAG Manager

4. Recommendation:

☒ This site meets the requirements for an inactive waste site, requires investigation, and should be included in the INEEL FFA/CO Action Plan. Proposed Operable Unit assignment is recommended to be included in the FFA/CO.
WAG: Operable Unit:

☐ This site DOES NOT meet the requirements for an inactive waste site, DOES NOT require investigation and SHOULD NOT be included in the INEEL FFA/CO Action Plan.

5. Basis for the recommendation:

The conditions that exist at this site indicate the potential for an inactive waste site according to Section 2 of MCP-3448 Reporting or Disturbance of Suspected Inactive Waste Sites.

The basis for recommendation must include: (1) source description; (2) exposure pathways; (3) potential contaminants of concern; and (4) descriptions of interfaces with other programs, as applicable (e.g., D&D, Facility Operations, etc.)

6. Contractor WAG Manager Certification: I have examined the proposed site and the information submitted in this document and believe the information to be true, accurate, and complete. My recommendation is indicated in Section 4 above.

Name: _____ Signature: _____ Date: _____

Marilyn Paarmann
Interview with Hance Clayton
INEEL ER Fish+QA Explosives Expert
April 11, 2001

Didn't have knowledge of Dick Green's test (before he came to INEEL).
Was familiar with site - said from CFA 633 on → in Naval firing fan.
He said there were no bomb frags just crater - true debris may have come from STF activities.
They blew up vehicles which may be metal fragments - or may have caused fluids to leak from vehicles and stain soil. Need to sample to determine mp

6

TRINITROTOLUENE (TNT)

*This web page is the result of an assignment for a User/System Interface Course in the Graduate School of Library and Information Sciences at the University of Texas at Austin.

"Trinitrotoluene, commonly known as TNT, is a constituent of many explosives, such as amatol, pentolite, tetrytol, torpex, tritonal, picratol, ednatol, and composition B. It has been used under such names as Triton, Trotyl, Trilite, Trinol, and Tritolo. In a refined form, TNT is one of the most stable of high explosives and can be stored over long periods of time. It is relatively insensitive to blows or friction. It is nonhygroscopic and does not form sensitive compounds with metals, but it is readily acted upon by alkalies to form unstable compounds that are very sensitive to heat and impact. TNT may exude an oily brown liquid. This exudate oozes out around the threads at the nose of the shell and may form a pool on the floor. The exudate is flammable and may contain particles of TNT. Pools of exudate should be carefully removed. TNT can be used as a booster or as a bursting charge for high-explosive shells and bombs". **This information is courtesy of the Ordnance Shop which is a web site dedicated to Navy and Marine Corps Aviation Ordnance.

**The photo is courtesy of the Engineering Analysis Group at the Los Alamos National Laboratory in Los Alamos, New Mexico.

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This page by David N. Locksley and you can email me your comments at: dlocks@mail.utexas.edu>
Thanks!

An inhalation reference concentration (RfC) for TNT has not been derived.

Limited information is available on the reproductive or developmental toxicity of TNT to animals or humans following inhalation exposures. Information from occupational exposure studies suggests that TNT may cause menstrual disorders and male impotency (Zakhari and Villaume 1978, Jiang et al. 1991).

No epidemiological evidence is available showing an association between chronic TNT exposure and tumorigenicity in humans. In animal carcinogenicity studies, a significant increase in urinary bladder papillomas and carcinomas was seen in female F344 rats dosed with 50 mg TNT/kg/day for 24 mo (Furedi et al. 1984a). This study was used by EPA to calculate a slope factor of 0.03 $(mg/kg/day)^{-1}$ (EPA 1991). TNT is classified in weight-of-evidence Group C, possible human carcinogen (EPA 1991a, b).

1. INTRODUCTION

2,4,6-Trinitrotoluene (TNT) is a yellow crystalline solid used as a high explosive in military armaments and as a chemical intermediate in the manufacture of dyestuffs and photographic chemicals (Sax and Lewis 1987). It is slightly soluble in water (104 to 113 mg/L) and soluble in alcohol, ether, acetone, benzene and carbon disulfide (EPA 1990). It has a density of 1.654 g/mL, a vapor pressure of 8.02×10^{-6} mm Hg at 25C, and a log K_{ow} of 1.60 (EPA 1990).

TNT is likely to enter the environment in wastewater effluents from production facilities and from leachates at waste disposal sites. Direct photolysis (half-life 14 hr) and microbial degradation are expected to be the major loss pathways. Mobility in soil may be limited by strong adsorption to soil particles. Volatilization to the atmosphere from water or soil is not expected to be significant (EPA 1990).

2. METABOLISM AND DISPOSITION

2.1. ABSORPTION

TNT is absorbed through the gastrointestinal tract, the skin, and the lungs. Studies on laboratory animals dosed with radiolabeled TNT have shown that rates of absorption, as indicated by the 24-hr recovery of radioactivity in the urine, can be as high as 74.3% following oral dosing and 52.8% after dermal exposures. Following intratracheal dosing to rats, urinary recovery was 12.7 to 19.3% after 4 hr (El-hawari et al. 1981).

2.2. DISTRIBUTION

ATSDR ToxFAQs

RDX

CAS# 121-82-4

September 1996

RDX
$C_3H_6N_6O_6$
Stereo Image
XYZ File

NFPA Label Key

Search ChemFinder

Agency for Toxic Substances and Disease Registry

This fact sheet answers the most frequently asked health questions about RDX. For more information, you may call the ATSDR Information Center at 1-800-447-1544. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

SUMMARY: RDX is an explosive. Few people will be exposed to RDX. Exposure to large amounts can cause seizures. RDX has been found in at least 16 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is RDX?

RDX stands for *R*oyal *D*emolition e*X*plosive. It is also known as cyclonite or hexogen. The chemical name for RDX is 1,3,5-trinitro-1,3,5-triazine. It is a white powder and is very explosive.

RDX is used as an explosive and is also used in combination with other ingredients in explosives. Its odor and taste are unknown. It is a synthetic product that does not occur naturally in the environment. It creates fumes when it is burned with other substances.

What happens to RDX when it enters the environment?

- Particles of RDX can enter the air when it is disposed of by burning.
- RDX can enter the water from disposal of waste water from military ammunitions plants, and it can enter water or soil from spills or leaks from improper disposal at these plants or at hazardous waste sites.
- RDX dissolves very slowly in water, and it also evaporates very slowly from water.
- It does not cling to soil very strongly and can move into the groundwater from soil.
- RDX can be broken down in air and water in a few hours, but it breaks down more slowly in soil.
- RDX does not build up in fish or in people.

How might I be exposed to RDX?

Few people will be exposed to RDX. Fewer than 500 people are known to work with RDX. These people can be exposed by:

- Breathing dust with RDX in it
- Getting RDX on their skin
- Drinking contaminated water or touching contaminated soil near factories that produce RDX.

How can RDX affect my health?

Animal testing is sometimes necessary to find out how toxic substances might harm people or to treat those who have been exposed. Laws today protect the welfare of research animals and scientists must follow strict guidelines.

RDX can cause seizures (a problem of the nervous system) in humans and animals when large amounts are inhaled or eaten. The effects of **long-term** (365 days or longer), **low-level exposure** on the nervous system are not known. Nausea and vomiting have also been seen. No other significant health effects have been seen in humans.

Rats and mice have had decreased body weights and slight liver and kidney damage from eating RDX for 3 months or more.

It is not known whether RDX causes birth defects in humans; it did not cause birth defects in rabbits, but it did result in smaller offspring in rats. It is not known whether RDX affects reproduction in people.

How likely is RDX to cause cancer?

The EPA has determined that RDX is a possible human carcinogen.

In one study, RDX caused liver tumors in mice that were exposed to it in the food. However, carcinogenic effects were not noted in rat studies and no human data are available.

Is there a medical test to show whether I've been exposed to RDX?

Medical tests are available that can measure RDX levels in your blood or urine. However, these tests can only be used if you have come in contact with RDX in the last few days. These tests can determine if you have been exposed to RDX, but they cannot tell how much RDX entered your body, or determine **long-term** health effects from RDX.

These tests aren't available at most doctors' offices, but can be done at special laboratories that have the right equipment. However, they cannot be used to determine **long-term** health effects from RDX.

Richardson, Cary

From: Broughton, Stephen
Sent: Monday, April 23, 2001 2:47 PM
To: Richardson, Cary
Subject: C-4

Composition - 4 is a plastic demolition explosive consisting of RDX, other explosives, and plasticizers. It can be molded by hand for use in demolition work and packed by hand into shaped charge devices. Two common types of C-4 are the M112 and M118 charges. The M112 block demolition charge consists of 1.25-pounds of Composition C4 packed in a Mylar-film container with a pressure-sensitive adhesive tape on one surface. The tape is protected by a peelable paper cover. In blocks of recent manufacture, Composition C4 is white and packed in an olive-drab, Mylar-film container. The M118 block demolition charge is designed as a cutting charge especially to be used against steel targets. The sheets of explosive can be quickly applied to irregular and curved surfaces and easily cut to any desired dimensions. The M180 Cratering Demolition Kit is a one-step, two-stage, surface-emplaced, 110-pound kit consisting of a standard 15-pound shaped charge, a firing device and a rocket-propelled 40-pound cratering charge. These components are mounted on one leg of a tripod assembly. When the kit is fired, the rocket on its downward acceleration strikes the firing device, which initiates the shaped charge through the demolition circuit. The shaped charge creates a hole in the ground to a depth of 6-9 feet. The accelerating rocket "follows through" the shaped charge back blast to the bottom of the hole, and penetrates further into the soil to an optimum charge burial depth. A time delay fuse detonates the cratering charge and produces a 12-22 foot diameter crater.

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PROJECT DOCUMENT REVIEW RECORD

DOCUMENT TITLE/DESCRIPTION: Site 035 Track 1 Decision Documentation Package, OU 10-08: Detonation Pits North of EOCR (DOE/ID 10901)

DATE: April 2, 2002 **REVIEWER:** IDEQ

ITEM NUMBER	SECTION NUMBER	PAGE NUMBER	COMMENT	RESOLUTION
COMMENTS				
1		Page 1, paragraph 1; Page 2, block II; Page 9, Block 2	It is not clear if the fuse and tear gas bomb are live or spent. Please clarify.	Comment incorporated. Upon further investigation, what someone had called M-60 "fuses" were actually M-60 "blanks" that the security forces used in training maneuvers. We have changed the word to "blanks." We have also clarified that all the tear gas bombs are spent.